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ABSTRACT

Although research on masculinity and femininity has increased over the past decade, longitudinal studies addressing predictive elements are lacking. The Rush Medical College Longitudinal Study examines the correlation between masculinity and femininity on the one hand and adjustment, interpersonal functioning, and impairment on the other. During orientation, 67 male and 32 female first-year medical students completed the Personality Attributes Questionnaire and 21 months later also completed measures of psychological well-being, interpersonal functioning, humanistic attitudes toward patient care, and alcohol consumption. Hierarchical multiple regression analyses with interaction terms revealed main effects of masculinity on self-esteem, extroversion, and confidence, and main effects of femininity on hedonic capacity, interpersonal satisfaction, sharing of personal problems, and alcohol consumption. Measures of impaired mood and alcohol and drug impairment were also studied in relation to masculinity and femininity. Both variables contributed to the prediction of depressed mood; femininity also contributed to the prediction of drug impairment. Neither scale has sufficient sensitivity or specificity to be used by itself as a test of impairment. Further study is needed to measure the precise relationship among low femininity, low hedonic capacity, and high potential for substance abuse. (Six data tables are included.) (Author/TW)

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# Masculinity, Femininity. and Psychosocial Adjustment in Medical Students: Two-Year Follow-Up

Peter B. Zeldow, Steven R. Daugherty, and David C. Clark

Rush-Presbyterian-St. Luke's Medical Center

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**Abstract**

As part of a longitudinal study of medical students, relations between masculinity and femininity and psychosocial well-being were investigated over a 21-month interval. Eighty-two percent (N=90) of a class of medical students completed measures of masculinity and femininity during orientation and, 21 months later, completed a broad array of measures of psychological well-being, interpersonal functioning, humanistic attitudes toward patient care, and alcohol consumption. Hierarchical multiple regression analyses with interaction terms revealed main effects of masculinity on self-esteem, extraversion, and confidence, and main effects of femininity on hedonic capacity, interpersonal satisfaction, sharing of personal problems, and alcohol consumption. No evidence for so-called balance androgyny formulations was found. Findings for masculinity were consistent with earlier findings from this study and others, but weaker in magnitude. Findings for femininity were surprisingly robust and enrich the construct validity of this measure. Measures of impaired mood, and alcohol and drug impairment were also studied in relation to masculinity and femininity. Both variables contribute to the prediction of depressed mood; femininity also contributes to the prediction of drug impairment. Neither scale has sufficient sensitivity or specificity to be used by itself as a test of impairment.

**Masculinity, Femininity and Psychosocial Adjustment in Medical Students: Two Year Follow-Up**

Research on masculinity and femininity defined as separate and independent dimensions of personality has proliferated over the last decade and has resulted in a number of substantive and methodological gains. A careful reading of the major review articles in this area (Kelly & Worrell, 1977; Taylor & Hall, 1982; Whitely, 1983) reveals, however, that the long-term consequences of high versus low masculinity and femininity are unknown. Longitudinal studies that would bear on the question of predictive, as opposed to concurrent, validity have not yet appeared.

One objective of the Rush Medical College Longitudinal Study has been the prediction of psychosocial and professional adjustment and impairment among medical students throughout their training. An early report described the cross-sectional correlates of masculinity and femininity and, in particular, enhanced understanding of the femininity construct (Zeldow, Clark, & Daugherty, 1985). A second article described the distinct adjustment patterns associated with masculinity and femininity over the course of the first year of medical school (Zeldow, Clark, Daugherty, & Eckenfels, 1985). The present study examines the correlates of masculinity and femininity, measured at the onset of medical school, among a variety of measures of adjustment and interpersonnal functioning measured late in the second year of medical school. In addition, it examines the relation between masculinity and femininity and three categorical measures of impairment.

## Method

Ninety-five per cent (N=115) of a class of first-year medical students completed the Personality Attributes Questionnaire (PAQ) (Spence & Helmreich, 1978) during orientation prior to beginning medical school. Twenty-one months later, 67 males and 32 females (82% of the entire class) (mean age = 25.4) completed the following measures:

Beck Depression Inventory (Beck, 1967);

Rosenberg Self-Esteem Scale (Rosenberg, 1965);

Eysenck Neuroticism Scale (Eysenck & Eysenck, 1964);

Eysenck Extraversion Scale (Eysenck & Eysenck, 1964);

Pleasure Capacity Scale (Fawcett, Clark Scheftner, & Gibbons, 1983);

Medical Student Self-Confidence Scale (Zeldow, Clark & Daugherty, 1985);

Concern with Regard of Others(Zeldow, Clark, & Daugherty, 1985);

Alcohol Intake Index (Ozgoren, Schork, & Harburg, 1979);

Interpersonal Satisfaction Index (Zeldow, Clark, & Daugherty, 1985);

Humanistic Attitudes toward Medicine Scale (Zeldow, Clark, Daugherty, & Eckenfels, 1985);

Proportion of Social Network Members who Would Turn to Subject for Help with a Personal Problem (Salloway, 1984);

Proportion of Social Network Members to whom Subject Would Turn for Help with a Personal Problem (Salloway, 1984).

In addition, three categorical measures of impaired functioning were used.[1]

**Mood Impairment**

Mood impairment was defined as a Beck Depression Inventory Scale >14 on at least two consecutive measurement occasions over the two years and four test administrations of the study.

**Alcohol Abuse**

Questionnaire items adapted from Cahalan, Cisin and Crossley (1969) were used to elicit the frequency of drinking occasions and the quantity of alcohol consumed per occasion for beer, wine and liquor (separately) over the previous six months. Responses were converted into a "pure ethanol oz/wk" summary score for each subject by means of Ozgoren, et al. (1979). Our previous work has demonstrated that according to class norms for males and females, 8.0 pure ethanol oz/wk constitutes a lower bound of excessive drinking (Clark, Eckenfels, Daugherty, & Rives, 1985). Thus alcohol abuse was defined as an alcohol consumption score >8.0 oz/wk on at least one occasion over two years.

**Drug Impairment**

Student subjects were asked to report the classes of illicit drugs they used over the prior six months and the frequency of use for each drug class on each administration. Our previous work has suggested that students using cocaine, psychedelics, or narcotics fall in the highest range of a latent "drug involvement" dimension that characterizes drug use parsimoniously (Clark and Gibbons, unpublished manuscript). Thus drug involvement was arbitrarily defined as any use of cocaine, psychedelics or narcotics during the two years.

**Statistical Analysis**

Multiple regression analyses were conducted as in Lubinski, Tellegen, and Butcher (1981, 1983). PAQ Masculinity (M) and Femininity

(F) scores and sex of subject (S) were regressed on each of our twelve interval scale dependent variables, first as main effects, in a stepwise incremental fashion, and then by entering the three two-way interaction terms (MXF ,MXS, FXS) using the same procedure.

The relationship of M and F to the nominal scale impairment variables was explored using likelihood ratio chi square tests and maximum likelihood logit regression analyses. The latter is an iterative procedure that provides separate estimates for the effects of M and F, while retaining the interval level information of the M and F scales to predict the dichotomous impairment criteria (Bock, 1975).

## Results

Means and standard deviations for all interval scale measures are reported in Table 1. The correlation between M, F, and the other measures are reported in Table 2. Results of multiple regression analyses are in Table 3. Masculinity predicts extraversion, self-esteem, and confidence of success in medical school at statistically significent levels. The correlation between masculinity and depression narrowly missed acceptable levels of statistical significance ($p = .07$), although masculinity assessed eight months into the first year correlated with second-year depression, $r = -.29$, $p = .006$. Femininity predicts hedonic capacity, interpersonal satisfaction,humanistic attitudes toward patient care, and, in reverse direction, alcohol consumption. Femininity is also associated with the social network variables pertaining to helpful actions: persons higher in femininity list a higher proportion of persons in their social networks to whom they would turn, and who turn to them, for help with intimate personal problems.

Table 4 shows the breakdown of mood, alcohol, and drug impairment as a function of personality type.[3] Fifteen students or 13% of the class met the criterion for depressed mood. High masculine persons were free of mood impairment but androgynous persons (high in both masculinity and femininity) were at risk along with the other groups. Eleven students or 9.5% met the criterion for alcohol abuse but no relation to personality type was found. Twenty-three students or 20% met the criterion for drug abuse which preponderated in the two groups low in femininity (high masculine/low feminine and undifferentiated). Table 5 displays the results of the maximum likelihood logit regression analyses. Masculinity and femininity contribute to the prediction of depressed mood; femininity also contributes to the prediction of drug impairment.

## Discussion

The results reveal an impressive degree of predictive validity for both the masculinity and femininity scales. Men and women who begin the year high in masculinity are, twenty-one months later, more extraverted, more confident of succeeding in medical school and beyond, and more filled with feelings of pride and self-worth than their low masculinity counterparts. Relations between masculinity and hedonic capacity, interpersonal satisfaction, low neuroticism, and low depression which had been found in earlier phases of the study did not hold up over a two year span. Still, the general relationship between masculinity and subjective well-being seems to endure the stresses and strains of the preclinical medical school curriculum.

Femininity effects have been less common and less well understood in the androgyny literature. Yet, in our study, femininity shows strong and enduring associations with the capacity to derive pleasure from a wide

array of experiences, interpersonal satisfaction, humanistic attitudes toward patient care, and low alcohol consumption. Earlier relations between femininity and extraversion, neuroticism, and regard for the opinion of others were not replicated. However, femininity does predict the proportion of persons in one's network with whom one would (potentially) share intimate problems.

There are many reasons why a correlation between two variables at one time point or over one interval of time may not be replicated over a new time interval. Depression, for example, may ordinarily be correlated with masculinity but fail to correlate with it if depressing environmental conditions override personality dispositions in particular circumstances. This may indeed have happened in our study since mean depression scores for the class reached a peak on the final test administration. Similarly, femininity may generally be associated with placing a premium on the admiration and respect of others. Yet stressful circumstances may breed a defensive disregard for the opinion of others which is so widespread that significant correlations become nearly impossible to attain. Such predictive failures, do not, then, mar the construct validity of our measures. Rather they provide valuable temporal and situational boundaries to known or expected associations.

Table 6 summarizes masculinity and femininity effects over three test administrations of the longitudinal study.[4] As mentioned above, the findings for masculinity suggest that high scorers are a self-confident and interpersonally dominant group, relatively free of negative affectivity or the disposition to experience emotional distress and upset (Watson & Clark, 1984). The unique contribution of this study is to accentuate the temporal stability of these findings. The findings for femininity resemble the

findings of Lubinski et al. (1981, 1983): our measure of concern for being liked and respected by others is similar to their notion of interpersonal accommodation. The correlations between femininity and both sharing and humanistic attitudes reflect, in part, the expressive, interpersonal orientation of high feminine subjects (Spence, 1983). As in our earlier work (Zeldow et al., 1985), the balance androgyny hypothesis was not supported. The slight support garnered for the additive androgyny hypothesis in Zeldow, Clark, and Daugherty (1985) was not reproduced in this longitudinal component of the study.

Concerning impairment, masculinity and femininity appear to contribute to the prediction of drug abuse and depression. Actually, impaired mood is equally distributed among the androgynous, high feminine, and undifferentiated groups. The combination of high masculinity and low femininity predicts the absence of mood impairment, a noteworthy finding but not one to enhance the clinical utility of the PAQ. Low femininity does predict drug impairment but not with sufficient specificity or sensitivity to warrant its clinical use. However the fact that persons low in femininity are both low in hedonic capacity and high in the potential for substance abuse is a provocative finding worth pursuing further. While low masculinity seems unequivocally associated with self-doubt and dysphoric mood, the clinical consequences of low femininity remain largely unknown.

## Footnotes

[1] Our use of these three impairment measures represents an initial step into the realm of clinically significant phenomena. We hasten to add that, at present, there is no additional evidence collected for the longitudinal study to corroborate our designation of certain subjects as mood-, alcohol-, or drug-impaired.

[2] Different hypotheses are associated with different sources of variation. The additive androgyny hypothesis is associated, for example, with significant main effects for M and F. The balance androgyny hypothesis is associated with a significant M x F interaction term. The interested reader should consult Taylor and Hall (1982), Lubinski et al. (1981, 1983), and Zeldow, Clark, and Daugherty (1985) for a more detailed discussion of these and other possible hypotheses and proper use of ANOVA and multiple regression analyses in their service.

[3] Subjects were classified into one of four types for purposes of this analysis: androgynous subjects (high M/high F); masculine subjects (high M/low F); feminine subjects (low M/high F); undifferentiated subjects (low M/Low F). Assignments were made on the basis of median splits on the M and F scales.

[4] An additional test administration, early in the second year of medical school, is not included in the current analysis because student participation was below 70%.

## AUTHOR NOTES

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Requests for reprints should be sent to Peter B. Zeldow, Department of Psychology and Social Sciences, Rush-Presbyterian-St. Luke's Medical Center, Chicago, Illinois 60612.

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**Table 1**

Means and Standard Deviations for All Variables

| Variable[a] | M | SD |
|---|---|---|
| Masculinity | 21.86 | 4.42 |
| Femininity | 23.65 | 3.75 |
| Beck Depression Inventory | 7.85 | 7.39 |
| Self-Esteem Scale | 6.45 | 0.82 |
| Neuroticism | 2.87 | 1.67 |
| Extraversion | 3.60 | 1.70 |
| Pleasure Capacity | 3.86 | 0.46 |
| Medical Confidence | 25.86 | 5.65 |
| Concern with Regard of Others | 9.62 | 2.89 |
| Alcohol Consumption | 2.40 | 3.35 |
| Interpersonal Dissatisfaction | 1.91 | 0.64 |
| Humanistic Attitudes | 23.21 | 2.60 |
| Social Network: Help others | 4.20 | 1.37 |
| Social Network: Turn to others | 4.05 | 1.49 |

[a]N=99.

**Table 2**

Correlations of Masculinity and Femininity with Adjustment and Satisfaction Variables

| Variables[a] | Masculinity | Femininity |
|---|---|---|
| Depression | -.19 | .05 |
| Self-Esteem | .38+ | .08 |
| Neuroticism | -.15 | .13 |
| Extraversion | .22* | .13 |
| Pleasure Capacity | .18 | .46*** |
| Medical Confidence | .32** | .12 |
| Concern with Regard of Others | -.14 | -.15 |
| Alcohol Consumption | -.01 | -.24* |
| Interpersonal Dissatisfaction | -.09 | -.29** |
| Humanistic Attitudes | -.01 | .46*** |
| Social Network: Help Others | .06 | .24* |
| Social Network: Turn to Others | .02 | .27** |

[a]N=99.

*p<.05. **p<.01. ***p<.0002.

**Table 3**

**Regressions of Masculinity, Femininity, Sex and All Possible Pairwise Interactions on Adjustment and Satisfaction Variables**

| Step | Variable | Depression R | Depression $R^2$ Change | Self-Esteem R | Self-Esteem $R^2$ Change | Neuroticism R | Neuroticism $R^2$ Change |
|---|---|---|---|---|---|---|---|
| 1 | M | .20 | .04 | .37 | .14*** | .14 | .02 |
| 2 | F | .20 | .00 | .39 | .01 | .20 | .02 |
| 3 | S | .20 | .00 | .39 | .00 | .20 | .02 |
| 4 | M x F | .20 | .00 | .39 | .00 | .22 | .01 |
| 5 | M x S | .22 | .01 | .39 | .00 | .22 | .00 |
| 6 | F x S | .22 | .00 | .39 | .00 | .24 | .01 |

| Step | Variable | Extraversion R | Extraversion $R^2$ Change | Pleasure Capacity R | Pleasure Capacity $R^2$ Change | Medical Confidence R | Medical Confidence $R^2$ Change |
|---|---|---|---|---|---|---|---|
| 1 | M | .22 | .05* | .17 | .03 | .32 | .10** |
| 2 | F | .24 | .01 | .47 | .19*** | .33 | .01 |
| 3 | S | .24 | .00 | .491 | .02 | .35 | .01 |
| 4 | M x F | .26 | .01 | .52 | .03 | .35 | .00 |
| 5 | M x S | .36 | .06* | .53 | .01 | .36 | .01 |
| 6 | F x S | .36 | .00 | .54 | .01 | .37 | .01 |

| Step | Variable | Importance of Regard R | Importance of Regard $R^2$ Change | Alcohol Consumption R | Alcohol Consumption $R^2$ Change | Interpersonal Dissatisfaction R | Interpersonal Dissatisfaction $R^2$ Change |
|---|---|---|---|---|---|---|---|
| 1 | M | .14 | .02 | .01 | .00 | .09 | .01 |
| 2 | F | .20 | .02 | .24 | .05* | .30 | .08* |
| 3 | S | .20 | .00 | .26 | .01 | .30 | .00 |
| 4 | M x F | .20 | .00 | .37 | .07** | .30 | .00 |
| 5 | M x S | .20 | .00 | .37 | .00 | .32 | .01 |
| 6 | F x S | .22 | .01 | .37 | .00 | .33 | .01 |

| Step | Variable | Humanistic Attitudes R | Humanistic Attitudes $R^2$ Change | Help Others R | Help Others $R^2$ Change | Turn to Others R | Turn to Others $R^2$ Change |
|---|---|---|---|---|---|---|---|
| 1 | M | .00 | .00 | .05 | .00 | .02. | .00 |
| 2 | F | .46 | .20*** | .24 | .05* | .26 | .06** |
| 3 | S | .48 | .02 | .26 | .01 | .28 | .01 |
| 4 | M x F | .48 | .00 | .26 | .00 | .28 | .00 |
| 5 | M x S | .48 | .00 | .36 | .06* | .30 | .01 |
| 6 | F x S | .48 | .00 | .36 | .00 | .30 | .00 |

NOTE: M = Masculinity, F = Femininity, S = Sex. These data were obtained by entering the three main effects in an incremental stepwise fashion and then entering the three interaction terms using the same procedure.
N = 99; *$p < .05$ **$p < .01$ ***$p < .001$



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**TABLE 4**

**Personality Type and Impairment among Medical Students**

| | Mood | | Alcohol | | Drug | |
|---|---|---|---|---|---|---|
| | Unimpaired | Impaired | Unimpaired | Impaired | Unimpaired | Impaired |
| Androgynous | 29 | 5 | 31 | 3 | 30 | 4 |
| High Masculinity | 32 | 0 | 29 | 3 | 25 | 7 |
| High Femininity | 19 | 6 | 24 | 1 | 23 | 2 |
| Undifferentiated | 21 | 4 | 24 | 4 | 15 | 10 |
| Chi Square | 11.40(df=3,p=.01) | | 2.16 (df=3,p=.54) | | 9.69 (df=3,p=.02) | |

**Table 5**

**Masculinity and Femininity as Predictors of Impairment in Medical Students: Results of Maximum Likelihood Logit Regression**

| | Impairment | | |
|---|---|---|---|
| | Mood | Alcohol | Drug |
| Masculinity | 9.13* | .66 | .01 |
| Femininity | 10.59** | 1.52 | 5.20*** |

* p = .003. **p = .001. ***p = .023.

**Table 6**

**Summary of Results of Three Multiple Regression Studies of Masculinity and Femininity Main Effects**

| | Test Administration | | |
|---|---|---|---|
| Masculinity Effects[a] | I | II | III |
| Depression | - | - | 0 |
| Self-Esteem | + | 0 | + |
| Neuroticism | - | - | 0 |
| Extraversion | + | + | + |
| Pleasure Capacity | + | + | 0 |
| Medical Confidence | + | + | + |
| Concern w/ Regard of Others | 0 | 0 | 0 |
| Alcohol Consumption | | | 0 |
| Interpersonal Satisfaction | + | + | 0 |
| Humanistic Attitudes | | 0 | 0 |
| Social Network: Help Others | | | 0 |
| Social Network: Turn to Others | | | 0 |
| Femininity Effects[a] | | | |
| Depression | 0 | + | 0 |
| Self-Esteem | - | 0 | 0 |
| Neuroticism | - | + | 0 |
| Extraversion | + | + | 0 |
| Pleasure Capacity | + | + | + |
| Medical Confidence | 0 | 0 | 0 |
| Concern w/ Regard of Others | + | + | 0 |
| Alcohol Consumption | - | - | - |
| Interpersonal Satisfaction | + | + | + |
| Humanistic Attitudes | | + | + |
| Social Network: Help Others | | | + |
| Social Network: Turn to Others | | | + |

**Note:**
+ indicates positive relationship; - indicates negative relationship; 0 indicates no relationship; Blank space indicates dependent variable was not administered.

[a]Masculinity and Femininity scales were administered during Test Administration I.
[b]Test administration I during orientation; Test administration II eight months later near end of first year; Test administration III 21 months later, near end of second year of medical school.